Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig. 1B. This sheet, which includes Figs. 1B and 2, replaces the original sheet including Figs. 1B and 2. In Figure 1B, the word "Density" in element 120 has been replaced with the word intensity. Applicants respectfully submit that this change is supported in the specification as-filed, at least at paragraph [073].

Attachments: Replacement Sheet

Annotated Marked-up Drawings sheet showing changes.

REMARKS/ARGUMENTS

Allowable Subject Matter:

In Office Action mailed October 26, 2005, the Examiner found that claims 7-13 and 20-27 would be allowable if rewritten in independent form. Applicants respectfully thank the Examiner for the finding of allowable subject matter.

Claims 7, 8, 9, 20 and 21 have been rewritten in independent form. Applicants respectfully submit that amended independent claims 7, 8, 9, 20 and 21 are allowable. Applicants respectfully submit that dependent claims 10-13 and 22-27 are allowable at least because they depend from allowable independent claims 7, 8, 9, 20 and 21.

Objection to Figures:

In the Office Action mailed October 26, 2005, the Examiner objected to Figure 1B. Applicants respectfully submit herewith a Replacement Sheet of drawings including an amended Fig. 1B as discussed in the Amendments to the Drawings section of this paper. Applicants respectfully request that the Examiner accept and enter amended Fig. 1B.

Rejection of Claims:

In the Office Action mailed October 26, 2005, the Examiner rejected claims 6 and 28-30 under 35 USC Section 112, rejected claims 1-3, 6, 14-16 and 19 as allegedly anticipated by US 4,827,527 (Morita), rejected claims 1, 4, 5, 14, 17 and 18 as allegedly anticipated by US 4,872,203 (Asai), rejected claims 28-33 as allegedly anticipated by US 6,233,348 (Fujii), and rejected claims 34 and 35 as allegedly unpatentably obvious over Fujii in view of US 4,353,056 (Tsikos).

Claims 2, 3, 15 and 16:

Applicant respectfully submits that the Examiner has failed to establish a prima facie case of anticipation with respect to claim 2. In the Office Action, the Examiner stated that claim 3 is allegedly anticipated by Morita. In support of the rejection, the Examiner states with respect to FIGS. 15 and 18 of Morita, that

"wherein the grey level of the entire image is compared to that of the succeeding image, inherently the average intensity of each image is used for comparison." Office Action, page 5. Applicants disagree.

Applicant respectfully submits that cited portions of Morita do not disclose each and every limitation of claim 2. For example, Morita does not disclose at least the following limitations:

> " . . . wherein the spoof detection module is configured to employ an average intensity technique to detect and classify the anomalies, the average intensity technique configured to cause the system to calculate an average intensity for each of the plurality of electrical representations."

as recited in claim 2 and incorporated into dependent claim 3; and

> " . . . calculating an average intensity for each of the plurality of electrical representations accepting the applied finger as a living finger when the average intensity, as sequentially measured over the plurality of electrical representations increases monotonically."

as recited in claim 15 and incorporated into dependent claim 16.

Morita Col. 11, lines 54-59 state that, "[u]nder the circumstances, it is possible to discriminate between the true and the false objects by monitoring variations of the greyu levels at fixed positions determined on the image area. In the example being illustrated, the fixed positions are of all of the picture elements arranged on the image area." Morita does not disclose "an average intensity technique to detect and classify the anomalies" as recited in claim 2 and does not disclose "calculating an average intensity for each of the plurality of electrical representations . . ." as recited in claim 15.

Moreover, the Examiner erred in basing the rejection on alleged "inherent" disclosures allegedly found in Morita. In support of the rejection, the Examiner stated that in Morita, "inherently the average intensity of each image is used for comparison."

Although the "express, implicit and inherent disclosures of a prior art reference may be relied upon in the rejection of claims" (MPEP 2112), the "fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic (MPEP 2112, citing In re Rijckaert, 9 F.3d 1531, 1534 (Fed. Cir. 1993). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily pr3esent in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." MPEP 2112, citingh In re Rbertson, 169 F.3d 734 (Fed. Cir. 1999). In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic, necessarily flows from the teachings of the applied prior art." MPEP 2112, citing Ex parte Levy, 17 USPQ2d 1461 (Bd. Pat. App. & Inter. 1990) (emphasis in the original).

In the case, the Examiner failed to establish a prima facie case of anticipation by not providing any extrinsic evidence of inherency and by failing to provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of Morita. The Examiner merely stated, without support by argument or extrinsic, factual evidence, that it was inherently disclosed in Morita. Applicants respectfully submit that the Morita does not disclose each and every element of either claim 2 or 15, and that the Examiner has failed to establish a prima facie case of anticipation. Applicants respectfully request that the Examiner withdraw the rejections of claims 2 and 15.

Applicants respectfully submit that claims 3 and 16 include additional limitations which serve to further distinguish the claims over Morita. Applicants respectfully request that the Examiner withdraw the rejections of claim 3 and claim 15 as being dependent on allowable claims 2 and 14, respectively.

Claims 4, 5, 17 and 18:

Applicants respectfully submit that the Examiner has failed to establish a prima facie case of anticipation with respect to claims 4, 5, 17 and 18. Applicants

respectfully submit that Asai does not disclose each and every limitation of claims 4, 5, 17 or 18. For example, Asai does not disclose at least the following limitations::

> " . . . the pixel density technique causing the system to determine an ON-pixel value based upon a first electrical representation, determine pixel count for each electrical representation in the plurality of electrical representations, wherein the counted pixels exceed the ON-pixel value . . . ."

as recited in claim 4 and incorporated into dependent claim 5; and

> " . . . determining an ON-pixel value based upon intensity values in the portion of the first image . . ."

as recited in claim 17 and incorporated into dependent claim 18.

In support of the rejections the Examiner cited FIG. 18 and col. 9, lines 9-49. Asai states, that "[t]he measurement circuit 82 detects whether or not each analog image signal is a black picture element and thereafter measures the number of the black picture elements as a first number . . . ." Asai does not disclose, "causing the system to determine an ON-pixel value based upon a first electrical representation . . . ." The Examiner has not cited any portion of Asai which presents discloses determining an "ON-pixel value based upon a first electrical representation."

Applicants respectfully request that the Examiner withdraw the rejection of claims 4 and 17.

Applicants respectfully submit that claims 5 and 18 include additional limitations which serve to further distinguish those claims over Asai. Applicants respectfully request that the Examiner withdraw the rejections of dependent claims 5 and 18 as being dependent upon allowable claims.

Claim 17 is herewith amended to add a semi-colon after the word "representations" and before the word "determining". Applicants respectfully request that the Examiner enter the amendment.

Claims 6 and 19:

Applicants respectfully submit that the Examiner has failed to establish a prima facie case of anticipation with respect to claim 6. In support of the rejection, the Examiner stated that Morita cited Morita, column 10, lines 29-46. Applicants respectfully submit that the cited portions of Morita do not disclose each and every limitation of claim 6. Moreover, Morita does not disclose at least the following limitations:

> "wherein the spoof detection module is configured to employ a ridge uniformity technique to detect and classify the anomalies, the ridge uniformity technique configured to cause the system to measure pixel intensity along ridges in each of the plurality of electrical representations, determine whether the pixel intensity increases in a spatially non-uniform manner, and accept the applied finger as a living finger when the pixel intensity does ~~not~~ increase in the spatially ~~specially~~ non-uniform manner."

as recited in claim 6; and/or

> "determining whether the intensity along the ridges increases in a spatially non-uniform manner; and
>
> accepting the applied finger as a living finger when the intensity along the ridges increases in a spatially non-uniform manner."

as recited in claim 19.

Morita states that, "a grey level of a finger print impression, namely, a ridge pattern is varied with time when a fingertip is placed as a true object on an input surface in a manner as illustrated [sic] in FIG. 2. More specifically, when the fingertip is brought into contact with the input surface at a time instant Ta, the grey level of the ridge pattern is rapidly varied and reaches a first predetermined grey level Ga at a time instant Tb. Thereafter, the grey level is slowly changed from the first predetermined grey level Ga and reaches a second predetermined grey level Gb at a time instant Tc."

Morita does not disclose a "ridge uniformity technique configured to cause the system to measure pixel intensity along ridges in each of the plurality of electrical representations, determine whether the pixel intensity increases in a spatially non-uniform manner, and accept the applied finger as a living finger when the pixel intensity does increase in the spatially non-uniform manner." Applicants therefore respectfully request that the Examiner withdraw the rejection to claim 6.

Applicants herewith amend claim 6. The amendments are supported in the specification as-filed at least at paragraph [091]. Applicant respectfully submits that claim 6, as amended, is not unpatentable under section 112. Applicants respectfully request that the Examiner enter the amendments and withdraw the rejection to claim 6 based on section 112.

Claims 28-34:

Applicants respectfully submit that the Examiner has not established a prima facie case of anticipation with respect to claims 28-33 and has not established a prima facie case of obviousness with respect to claim 34. Fujii does not disclose each and every limitation of any of claims 28 -35. Nor do Fujii or Tsikos, alone or in combination, disclose, teach or suggest each and every limitation of claim 34. For example, Fujii does not disclose at least the following limitation from amended claims 28-33:

> " . . . a spoof detection module to extract minutia type information from a first electrical representation, compare minutia type information with information corresponding to an enrolled object, calculate a ratio of mismatched minutia type information to matching minutia information, and reject the applied object as an inverted spoof when the ratio exceeds a threshold type mismatch ratio."

as recited in independent claim 28 and incorporated into dependent claims 29 and 30.

> " . . .extracting minutia type information from the one or more electrical representations;

determining whether the minutia type information matches a minutia type of a matching minutia from an enrolled object;

calculating a ratio of mismatched minutia types to matching minutia; and

rejecting the fingerprint signal as a spoof when the ratio of mismatched minutia types to matching minutia exceeds a threshold mismatch value."

as recited in independent claim 31 and incorporated into dependent claims 32 and 33.

Neither Fujii nor Tsikios disclose, teach or suggest, alone or in combination, at least the limitations listed above with respect to claim 31, which are incorporated into dependent claims 34 and 35.

In support of the rejections, the Examiner stated that Fujii allegedly discloses, a "spoof detection module extract minutia type informatoin from the electrical representation (Fig. 15, S33, wherein feature points correspond to minutia), compare minutia type information with information corresponding to an enrolled object (Fig. 15, S38), calculate a ratio of mismatched minutia type information to matching minutia information, and reject the applied object as an inverted spoof when the ration exceeds a threshold type mismatch ration (Fig. 15, S39)." Applicants respectfully submit that the Examiner erred in reaching his conclusion.

Fujii does not disclose "determining whether the minutia type information matches a minutia type of a matching minutia from an enrolled object; calculating a ratio of mismatched minutia types to matching minutia; and rejecting the fingerprint signal as a spoof when the ratio of mismatched minutia types to matching minutia exceeds a threshold mismatch value." In the portion of the specification discussing the cited Fig. 15, S39, Fujii states, "next, the number of all feature points in the registered fingerprint and the input fingerprint is counted. The number of the same feature points is normalized with the number of all feature points and thereby a fingerprint match ratio is calculated (at

step S39)." It does not discuss, "calculate a ratio of mismatched minutia type information to matching minutia information . . . " as recited in claim 28.

Fujii discusses that:

> " . . . when the type of an adjacent feature point is detected as a different type of a feature point, the main distance of the feature point may become a sub distance thereof. Alternatively, the sub distance of the feature point becomes the main distance thereof. Thus, even if the main distance matches the sub distance, the evaluation point of the match ratio of the ridge connection relation is increased. However, this evaluation point is lower than an evaluation point designated in the case that the main distances match or an evaluation point designated in the case that the sub distances match. Thus, even if the type of an adjacent feature point is detected as a different type due to a deviation of the pressure of the finger to the fingerprint sensor, the fingerprint can be accurately identified."

Fujii:25:30-44. Fujii does not disclose to "calculate a ratio of mismatched minutia type information to matching minutia information."

The specification for this application states, "In step 820, the matching minutiae are classified by type by extracting information from the image. By classifying each minutia by type it is meant is endpoints and bifurcations are so marked. If the matching minutiae of the enrolled image have not already been classified, then they are classified too. . . . In step 824, a test is performed to determine whether the captured and enrolled minutiae are of the same type. If they are not, then a type mismatch counter is incremented in step 828. If they are, or after step 828, then a next test (step 832) determines whether there are more minutia that need to be compared. If there are more minutiae to be compared, then a next minutiae is retried in step 836 and processing continues to step 808. If there are no more minutiae to be compared, then in step 840 the ratio of the type mismatch counter value to the match counter value is calculated." Specification page 33, lines 14-30.

Applicants respectfully request that the Examiner withdraw the rejections of claim 28.

Claims 29-35 each include additional limitations which serve to further distinguish the rejected claims over the cited references. Applicants respectfully request that the Examiner withdraw the rejections of claims 29-35.

Applicants herewith amend claims 28 and 29. Applicants respectfully submit that the changes are supported in the Specification as filed. Applicants respectfully submit that claim 28, as amended, is not unpatentable under Section 112 and is not objectionable as allegedly grammatically incorrect. Applicants respectfully request that the Examiner withdraw the objection to claim 28 and withdraw the rejection of claim 18 based on Section 112.

Conclusion:

For the reasons given above, Applicants respectfully request that the Examiner withdraw the rejections to claims 1-6, 14-19and 28-35, withdraw the objections to Fig. 1B and claims 6 and 28, and allow all of the pending claims, 1-36. Applicants respectfully request that the Examiner withdraw the objections to Fig. 1B and to claims 6 and 28.

Respectfully submitted,

Dated: 01 June 2006

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ANNOTATED MARKED-UP DRAWINGS

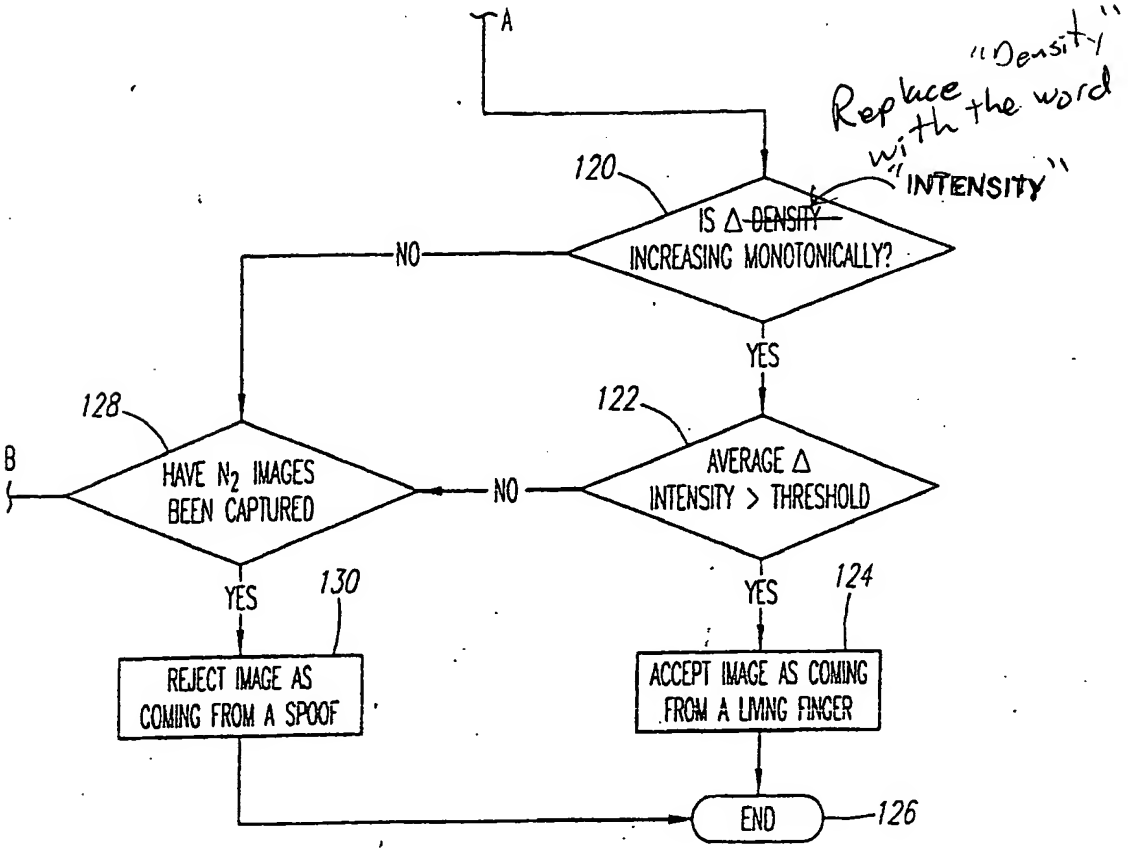

FIG. 1B

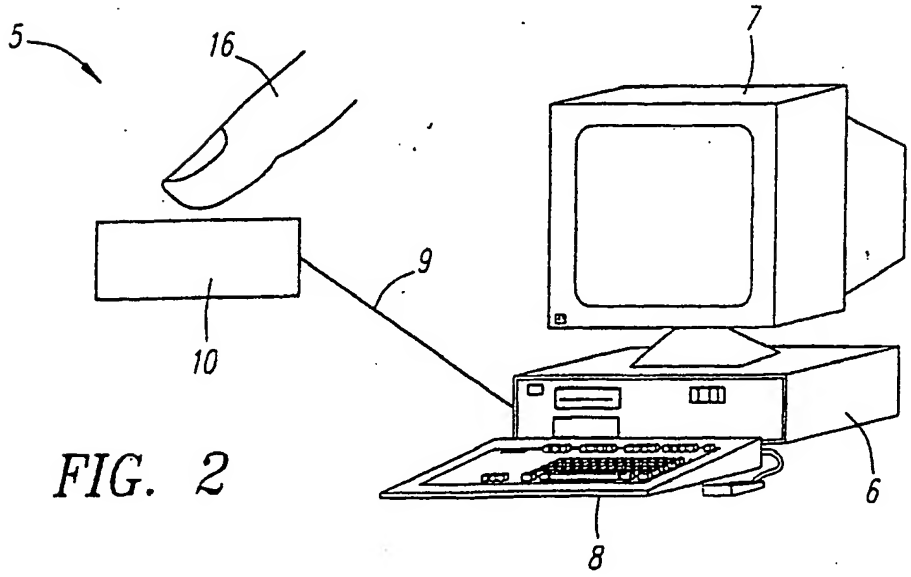

FIG. 2